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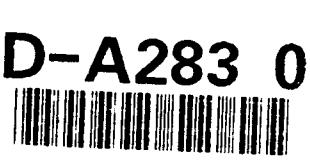

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THE USE OF BATTLESPACE AND TIME IN THE OPERATIONAL ART

by

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Lieutenant Colonel, USAF

A RESEARCH REPORT SUBMITTED TO THE FACULTY

IN

FULFILLMENT OF THE CURRICULUM

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Advisor: Alexander S. Cochran, PhD

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ABSTRACT

TITLE: The Use of Battlespace and Time in The Operational Art

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The study of operational art, the planning and execution of campaigns and major operations, requires careful integration of several concepts, including "center of gravity," "culminating point," and "lines of operations." This study contributes to joint military strategy by offering two additional ways that joint planners and commander's can conceptualize the battlefield: battlespace and time. The author analyzed these two concepts using the three levels of war: strategic, operational, and tactical. In a strategic battlespace, nations apply the political, economic, psychological and military elements of national power, in both peace and war. These elements of national power also affect operational battlespace. The paper defines battlespace as a conceptual area with the following characteristics:

a. The battlespace includes not only the friendly forces, but also the enemy forces the battlespace commander is fighting.

b. The mission and combat capabilities of the respective forces inside of it, to include the enemy's, constrain the battlespace.

c. The battlespace is a self-contained, closed loop system constrained in time.

d. When defined correctly, each battlespace will have two centers of gravity, one to attack and one to protect.

BIOGRAPHICAL SKETCH

Lt. Col. Daniel W. Jordan, III (MHRM, Pepperdine Univ; MMAS, US Army Command and General Staff College) is an Air Force fighter pilot with 2000+ hours in the A-7, OV-10, O-2, F-16A, and F-117 and has served as an Air Liaison Officer with the 82nd Airborne Division. In addition to his extensive tactical background, he has served on a combined, operational level headquarters at 4th Allied Tactical Air Force in Heidelberg, Germany. He is also a fully qualified joint staff officer. Lt. Col. Jordan is a graduate of the Air War College Class of 1993.

INTRODUCTION

Space and time are two terms used routinely in literature and discussion concerning the operational art. Robert R. Leonhard, in his *Art of Maneuver*, holds that these are simple concepts for the military man.[1] This paper posits that to a soldier, sailor, or airman, space and time may be simple concepts, but only when understood within their own service cultures. These terms are, in fact, very difficult to comprehend, especially when viewed in the broader context, such as the design of a joint campaign. Examples of their usage include: "...integration in time, space and aim," or "...trading space for time." Just what exactly does that mean? Can you trade time for space?

Operational art is defined as:

> The employment of military forces to attain strategic goals...through **the design**, organization, and **conduct of campaigns** and major operations. Operational art translates strategy into operational and, ultimately, tactical action.[2]

The focus of this paper, then, is the use of space and time in the operational art. A better understanding of these two concepts will aid the strategist, planner, and operational commander in formulating future strategies and campaign plans.[3]

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[1]Robert R. Leonhard, *The Art of Maneuver, Maneuver-Warfare Theory and AirLand Battle* (Novato, Ca: Presidio Press, 1991), 82.

[2]Armed Forces Staff College, AFSC PUB 2: *Service Warfighting Philosophy and Synchronization of Joint Forces* (Norfolk, Virginia: August, 1992), G-9.

[3]From hereon, the term "battlespace" will be used to describe the conceptual idea of "operational space" in a theater. This convention is necessary to prevent confusion with the use of the term "space" to mean "outer space" and the assets existing therein (space forces).

DEFINITIONS

This paper refers to three levels of war: strategic, operational, and tactical.[4] The use of these terms can be very confusing. For example, army officers generally refer to the levels of war by echelons of command.[5] Airmen, on the other hand, usually refer to the levels of war by the class of target. Figure 1 graphically depicts the three levels of war and how most strategists and operational planners conceptualize these levels by organizational size and echelon. There is general agreement on the definitions of the strategic and tactical levels of war.

The **operational level** of war is that level of warfighting that spans the continuum between the strategic level and the tactical level. It is at this level of war that campaigns and major operations are "planned, conducted, and sustained to accomplish strategic objectives."[6] The means of the operational level of war are individual tactical actions,

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[4]Edward Luttwak, in *Strategy, The Logic of War and Peace*, also developed a fourth level, the technical level of war.

[5]Department of the Army, FM 100-5, *Operations* (Washington, D.C., 1986), 10 and 185. An example might be, "Corps are operational level formations."

[6]Joint Chiefs of Staff, JCS Pub 1-02: *DOD Dictionary of Military and Associated Terms* (1 December 1989), 264.

battles, and engagements. The ends are victories from major operations and campaigns.[7]

Richard Simpkin, in his *Race to the Swift*, defined the operational level as a category of war divorced from organizational size or hierarchy. Simpkin believed that a concept, plan, or warlike act was "operational" if it met several criteria. It must have a strategic aim; be a **dynamic, closed loop system**; be **synergistic**, and be **self-contained** within the scope of its mission.[8] A summary of this construct for the levels of war, independent of organizational size or echelon, is in the following table. Based on general

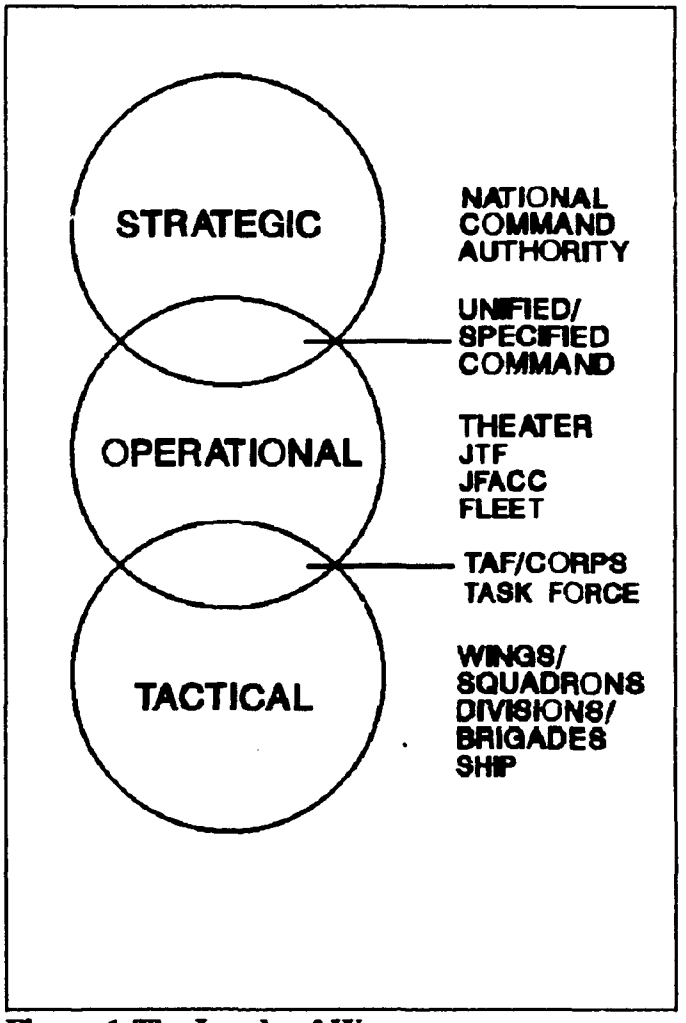

Figure 1 The Levels of War

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[7]Stephen E. Runals, "A Different Approach," *Military Review* (October, 1987): 48. Also see JCS Pub 1-02, p. 362. The interdiction mission of an F-111 might be illustrative of the three levels of war as they will be used in this paper. The decision to send the F-111 squadron to the theater was a strategic level decision. The employment, tactics and flight of the F-111 to a target is obviously at the tactical level of war, from the point of view of the pilot. However, the decision to assign this particular force (the F-111) into the battle against a target whose destruction will achieve or contribute to a strategic objective was an operational level activity based on commonly held principles of war. This is a very important point. The action of the F-111, regardless of the target it strikes, is a tactical action. It's target may have strategic consequences, but the decision to apply the F-111 to that target is an operational level activity.

[8]Richard Simpkin, *Race to the Swift, Thoughts on Twenty-First Century Warfare* (London: Brassey's, 1985), 24.

systems theory, Simpkin's definition of the operational level of war, especially as a "self-contained, closed loop system," is very useful for this analysis of time and battlespace.[9]

LEVELS	CHARACTERISTICS	MEANS	ENDS
STRATEGIC	National/Alliance security objectives determined National resources applied	Results of major operations and campaigns	Military conditions for peace
OPERATIONAL	Dynamic, closed loop, self-contained system Sequence battles and engagements to achieve strategic aims	Individual tactical actions and victories	Victories from major operations and campaigns
TACTICAL	Battles and engagements are planned and fought	Fighting forces	Tactical victories

General system theory defines a system as "a set of interacting elements that receives inputs, transforms that input, producing output, and then passes that output back to its environment." A system is an "open" system if it interacts with the environment to survive.[10] Synergy is the behavior of the total system, independent of the behavior of its component parts. In other words, the whole is greater than the sum of its parts.[11] Using this construct, the individual parts of a fighter squadron, operations and maintenance, have no outward combat value over time. However, joined into a squadron organization, with appropriate sustainment, these parts form a combat unit able to

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[9]Stephen W. Littlejohn, *Theories of Human Communication* (London: Charles E. Merrill Publishing Co., 1978), 30.

[10]Richard L. Daft, *Organization Theory and Design* (New York: West Publishing Company, 1989), 11.

[11]John P. Novosad, *Systems, Modeling and Decision Making* (Dubuque, Iowa: Kendall/Hung Publishing Company, 1982), p. 6.

generate hundreds of sorties.[12] When considered in the context of the missions it receives from its headquarters, as well as the sustainment operations that continue to supply it, this squadron is representative of an open system.

In contrast, a "closed loop" system "brings results from past action of the system to control future action." In a closed loop system, action generates still more action. Events or activities occurring outside the system do not affect it (see Figure 2).[13] Stated another way, a system is closed if there is no change in the elements of that system from outside sources.[14]

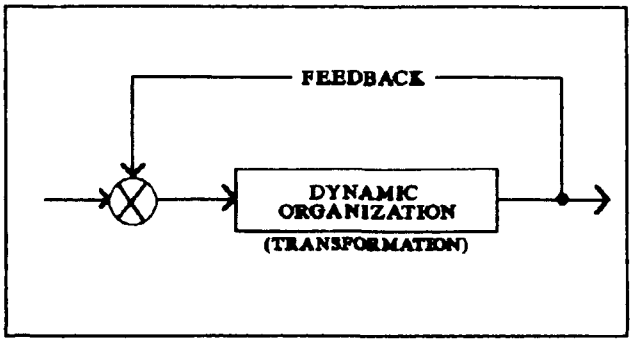

Figure 2 Closed Loop System

While a true closed system cannot exist, it is useful to consider military operations within this construct. Whether a system is open or closed depends entirely on how large a universe one wants to include in the analysis. Consider a naval ship injured by an incoming missile. This action generates more action through the ebb and flow of technical movements to repair the damage and an appropriate change in tactics to offset lost combat capability. This closed loop system becomes open (makes outside contact to survive) when the ship receives a tow or returns to dry-dock for repairs.

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[12]Another example of an organization designed to improve its synergy would be the U.S. Air Forces's recent creation of a composite wing.

[13]Novosad, 27.

[14]Brent D. Ruben and John Y. Kim, *General Systems Theory and Human Communication* (Rochelle Park, NJ, 1975), 61.

No military organization will be self-contained and exhibit the characteristics of a closed loop system for very long. A unit receives its orders. Brigade supply replenishes the armor battalion. The airborne unit needs resupply three days after its assault. The fighter flight has to refuel or return to base. The carrier will rearm every three days. However, for that limited time when the commander conducts his mission, the battlespace will be a self-contained, closed loop system.

The concept of the **center of gravity** is another concept used in operational art. The essential task of campaign design is the identification of the enemy center of gravity. The campaign plan must then orient on that center of gravity.[15] Whether that center of gravity is strategic or operational, or both, is dependent on the battlespace and time frame in which the operational commander must work.

BATTLESPACE

The idea that a battlefield, expanded to a theater of operations, can be a closed loop system has extraordinary merit for the conceptualization and design of joint campaigns. Battlespace is a new term beginning to appear in new U.S. joint doctrine. While there has been general disagreement over its definition, the term has a narrow, tactical focus.[16]

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[15]Joint Chiefs of Staff, Joint Pub 1: *Joint Warfare of the U.S. Armed Forces* (11 November 1991), 46.

[16]For example, see U.S. Naval and Marine doctrine, "...From The Sea," September, 1992, p. 8. For a concept that tends toward the operational level, see "Full Dimensional Operations," JCS briefing, dated June 24, 1992. The language is evolving as Joint Pub 3.0, *Joint Operations*, is developed.

For a construct of battlespace, return to Richard Simpkin's previous definition of the operational level of war: a self-contained, closed loop system. In this context, closed-loop implies that an event in one area of the battlespace will have a synergistic effect in another area, regardless of the medium. If this is true, then battlespace, regardless of the level of war, must have similar characteristics:

a. Battlespace has four dimensions: width, depth, height, and time.

b. Battlespace is a self-contained, closed loop system.

c. Battlespace includes not only friendly forces, but also the enemy forces the battlespace commander is fighting.

d. The mission and combat capabilities of the respective forces inside it, including the enemy's, constrain the battlespace.

e. Each battlespace will have two centers of gravity, one to attack and one to protect.

Can there be more than one enemy center of gravity? Strategy orients on a strategic center of gravity. Campaigns orient on an operational center of gravity. There is only one strategic center of gravity and one operational center of gravity in each battlespace. In order to investigate this further, consider battlespace at the tactical level.

THE TACTICAL LEVEL

At the tactical level of war, each tactical commander "fights" his unit within his respective battlespace. "Fights" is a useful term because it characterizes the issue of

which commander fights with what weapons. As the pugilist fights with his fists, and the marshall artist fights with his fists and his feet, each tactical commander will fight with the weapon available at that time, be it a ship, a fighter, or a battalion. Therefore, because the weapons are different, each of the services has a different perspective about battlespace and the forces fighting within it.

Regardless of one's perspective, however, one fact is inevitably very clear. At the tactical level, the tactical commander is the single best authority at employing and synchronizing his combat power within his battlespace. This obviously becomes an issue when tactical commanders try to "fight" with assets that are not organic to their command. Similarly, since a battlespace includes the enemy force within it, there will be a problem when tactical commanders try to "fight" enemy forces outside their battlespace.[17]

The captain of a naval combat vessel fights his vessel. He uses it as a weapon against the air, surface and subsurface threats he faces. His battlespace is three-dimensional in width, length, and depth/height. There is a finite size to this battlespace. The range of the ship's weapons or sensors, the capabilities of its communications, and the captain's focus on his mission, all affect the captain's battlespace. Therefore, he measures his battlespace in tens of miles. His mission drives his battlespace. It shapes it. This captain's battlespace is narrow in focus.

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[17]Thus, the ground commander never really "controls" his close air support (CAS) because the fighter flight leader has the ultimate responsibility concerning the tactical control of his flight. The further the CAS or interdiction target is away from ground forces, the less impact the ground commanders battlespace will have an effect on the flight leaders battlespace, and vice versa. This situation is taken to extremes when ground commanders try to control the actions of tactical units outside of their own battlespace, as in interdiction beyond the Fire Support Coordination Line (FSCL).

When the task force commander integrates this ship into a task force, it becomes one of the many weapons with which the task force commander fights. By the nature of his force, the task force battlespace is much greater, up to hundreds of miles. The effect of a tactical engagement on one side of the battlespace could, and probably would, affect the way he fights his force. For example, an anti-air warfare cruiser sunk by a submarine will leave a gap in the anti-air screen of the task force. Within the constraints of his self-contained battlespace, the task force commander will adjust with the forces he has available.

For a limited time, the task force battlespace is a self-contained, three-dimensional area in which the tactical actions of any of the parts do not affect, and are not affected by, military actions outside its battlespace. An excellent example of this occurred during the Battle of Leyte Gulf. Admiral William "Bull" Halsey's decision to turn Third Fleet north and away from the landing operations he was supporting effectively created two separate battlespaces. One was to the north, as Halsey fought the enemy in his battlespace, the Japanese Third Fleet in the Battle off Cape Engaño. The second was to the south in the Battles of Samar and Surigao Strait. Here, Admiral Thomas C. Kincaid's Seventh Fleet fought its enemy, the Japanese Southern Force.[18]

Use the same type of analysis to describe the battlespace of an army or marine ground commander. Again, the mission, the weapons available, and the enemy define the ground commander's battlespace. Therefore, measure ground tactical battlespace in miles. In general, at the lower echelons of command, his battlespace is two-dimensional

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[18]E.B. Potter, ed. *Seapower, A Naval History* (Englewood Cliffs, N.J.: Prentice Hall, Inc., 1960), 781-793.

with width and depth. While neighboring battalions certainly affect his success or failure, the farther apart the units, the less his concern about their impact on his battalion's battlespace.[19]

As with the naval task force, this battalion is also one of the brigade commander's weapons. The brigade becomes part of the division fight, the division becomes part of the corps fight and so on. Up to a corps sized formation, the battlespace grows increasingly three-dimensional because of improved capabilities and airspace responsibilities. With each increase in size, the respective ground battlespace grows larger, also encompassing a proportionally larger enemy ground force. Similarly, for a limited time, the farther apart the tactical units, the less influence those units have on each other. Their battlespace becomes self-contained, and therefore, exhibits the characteristics of synergistic, closed loop system.[20]

Tactical operations for air forces are quite different from naval or ground forces. At the tactical level, airmen focus on the employment of airpower in battles and engagements. From this point of view, the tactical flight leader fights inside a highly dynamic battlespace. Unlike the ship commander or the battalion commander, the fighter pilot measures his battlespace in the hundreds of miles, both vertically and horizontally. However, the flight leader's battlespace is still relatively small compared to

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[19]See "VII Corps Inactivated," *Military Review* (April, 1993), 68. In a comparison between WWII and the Gulf War, the greatest distance VII Corps travelled in one day was 90 miles. Also see Major General John E. Miller, "Going Deep, Division Air Assault Operations," *Military Review* (April, 1993), 5.

[20]This is not to imply that a commander is not interested in activities outside of his battlespace. The good commander will have the vision to see left, right and all around. However, his battlespace is still constrained by all the factors already described, including the commander's inability to influence events outside of his battlespace.

the Airborne Warning and Control (AWACS) aircraft, Air Operations Centers (AOC), and Airborne Command Control and Communications (ABCCC) aircraft that control him.

For airmen, the leap from a fighter's battlespace to that of the full width and breadth of the theater is almost instantaneous. Since air forces do not task by squadrons and wings, but rather by missions and sorties, there is no parallel to the gradual hierarchy of tactical command more common to the navy (ship to task force) or ground forces (battalion to brigade to division, etc.). In fact, unlike ground forces, the air commander essentially fights in three different battlespaces. He fights his entire air force against the enemy's air force, against the enemy's ground forces not yet in contact, and against the strategic capabilities of the adversary.

If the battlespace of a tactical unit is self-contained and synergistic, then the next conclusion must be that the tactical commander of that battlespace is the one best qualified to "fight" inside it. This assumption presupposes that tactical commanders of one service do not command or control the tactical forces of another. Thus, ground tactical commanders cannot control an air force engagement of an armored column, as in the "Highway of Death" in the Gulf War. This is especially true if the engagement occurs outside the effective battlespace of the ground commander.

These comparisons of tactical battlespace are also valid when crossing mediums. At the tactical level, each tactical commander has a battlespace that will overlap with adjacent units. Conceptually, however, each battlespace is self-contained and a whole

unto itself. The comparative standard at this level should be what the respective tactical commander fights with, be it his ship, his battalion, or his tactical flight.

THE STRATEGIC LEVEL

Battlespace at the strategic level focuses on the highest levels of national and coalition power. Leaders employ all elements of national power, including the political, economic, psychological, and military elements. Therefore, strategic battlespace is not so much a definable "space," as a concept. During Desert Shield/Storm, the Coalition defined its battlespace by its strategic focus and its objectives. The coalition had available to it not just military power, but also the full weight of its economic and political power.

Given the previous definition of battlespace, strategic battlespace must relate to those elements that reflect a self-contained, closed loop system (see Figure 3). For example, the political threat that Israel posed had they entered the Gulf War affected military anti-SCUD operations in Iraq and the strategic decision to deploy Patriot missile batteries to Israel. During the Falklands War, it was political factors that influenced the decision to attack Goose Green. The British Parliament perceived a need for a land victory to offset mounting naval and air losses.[21]

Similarly, military action in the Gulf affected the actions of the Coalition in the political realm. Incidents like the Iraqi oil spill into the Persian Gulf and the Iraqi Air

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[21]Adm. Harry D. Train, US Navy (Ret), "An Analysis of the Falkland/Malvinas Islands Campaign," *Naval War College Review* (Winter 1983): 33-50. See also Max Hastings and Simon Jenkins, *The Battle For the Falklands*, (London, W.W. Norton & Company: 1983), 231.

Force's flight to Iran, affected many political actions on the part of the Coalition.

Strategic battlespace has utility when trying to accomplish center of gravity analysis. What are the enemy's strategic objectives? Given his objectives, what is the enemy's "hub of all power and movement?" In other words, what asset of national power does he need to accomplish his strategic objective?

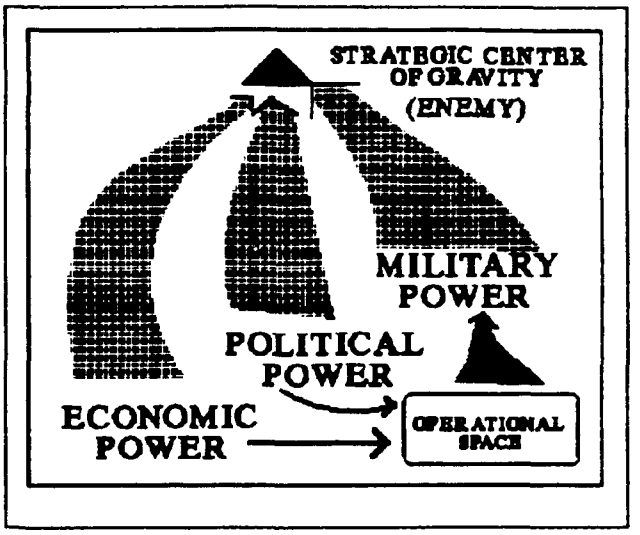

Figure 3 STRATEGIC BATTLESPACE

At the strategic level, a failure by political-economic means will result in military action. Similarly, the inability of military forces to successfully attack an enemy strategic center of gravity will necessarily demand that the political-economic realm become dominant again. Thus, the concept of a self-contained closed loop in a strategic battlespace is reinforced.

Whatever the strategic battlespace turns out to be, and no matter what the center of gravity analysis determines, there must be one conclusion. At the strategic level of war, there will be a single strategic center of gravity that should be the focus of the national strategy. Within that strategic battlespace, political leaders can use all the elements of national and coalition power.

THE OPERATIONAL LEVEL

At the operational level, the concepts of "fighting your force" and "a self-contained, synergistic, closed-loop system" help to define the battlespace for operational level commanders. All the tactical battlespaces of all the tactical units inside it shape the operational battlespace (for a very limited example, see Figure 4). The operational commander is responsible for converting strategic objectives into tactical and operational victories. He employs operational art to formulate subordinate objectives and allocates forces to tactical commanders to accomplish those objectives.

Using this definition, component commanders will be operational level commanders. They are converting strategic objectives into tactical victories by formulating operational objectives and allocating resources. However, the navy task force commander or the army corps commander, unless they are joint task force (JTF) commanders, can only be, and will always be, tactical commanders. Thus HQ, JTF-120 in Operation Urgent Fury was an operational headquarters, but a similarly configured formation in the Gulf War was not. While HQ XVIIIth Airborne Corps was an

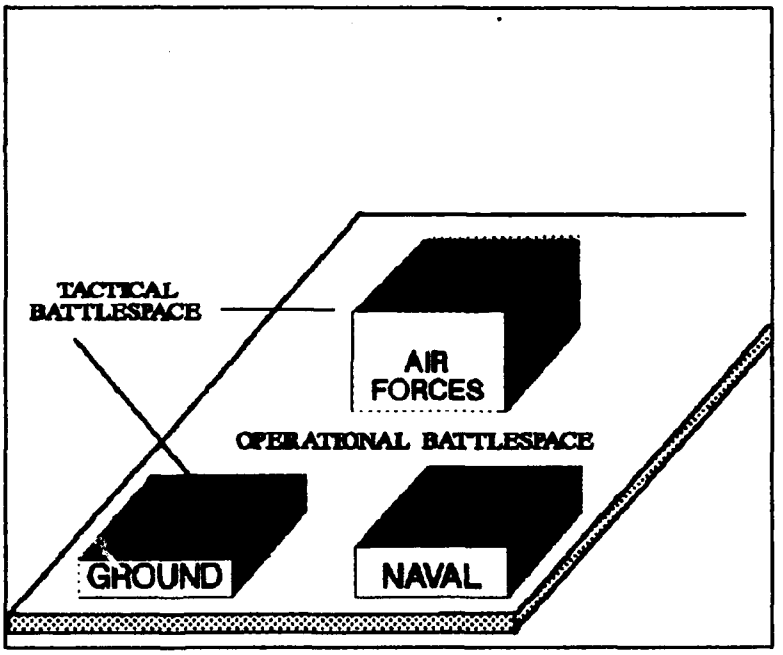

Figure 4 TACTICAL BATTLESPACE INSIDE OF AN OPERATIONAL BATTLESPACE

operational headquarters in Operation Just Cause; it was a tactical level headquarters in the Gulf War.

The tactical actions of air, land and sea forces will be synergistic within an operational battlespace. The naval tactical commander, within his battlespace, will protect the flank or rear of a ground unit. The air commander will win air superiority, and thus protect the freedom of action of ground or naval units. Ground forces may secure a shore, thus protecting a naval task force from cruise missile attacks. Within an operational battlespace, each of the components and tactical units interact, and thus becomes greater than the sum of its parts. Operational art dictates that planners design campaigns to optimize the abilities of each force in a series of battles and engagements to achieve a strategic objective.

In 1944, Allied Air Forces successfully won the air superiority battle over France and the Benelux. The defeat of the *Luftwaffe* in that area denied freedom of maneuver to German tactical ground forces in France and assured allied freedom of action during the Normandy Invasion.[22]

Another example of the interaction of tactical units within a self-contained operational battlespace is the Soviet counteroffensive at Stalingrad in November, 1942. During the Soviet attack, the *Luftwaffe's* failure to win air superiority gave the operational advantage to the Soviets in the air and on the ground. Rather than winning the tactical battle for the air, the *Luftwaffe* focused on air support and airlift, thus giving the Soviet air and ground forces freedom to maneuver. Continued Soviet advances resulted

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[22]B.H. Liddell Hart, ed. *The Rommel Papers* (New York: Harcourt, Brace, 1953), 476-477. Also see Williamson Murray, *Strategy for Defeat, 1933-1944* (Maxwell AFB, Alabama, 1983), 284.

in the loss of *Luftwaffe* forward bases, thus denying the *Luftwaffe* freedom of action over the surrounded German 6th Army. The 6th Army surrendered in February, 1943.[23] In this example, the interaction of the various tactical units, operating inside their own battlespaces, created a synergy within the larger operational battlespace.

At each level of command, within each battlespace, there will be a way to conceptualize the hub of the enemy's power and freedom of action, his center of gravity. The proper identification of a center of gravity defines the development of the campaign plan. During the height of the Cold War, NATO operational commanders focused on an operational center of gravity to defeat the overwhelming force to their front. However, in so doing, they shaped a battlespace that did not include the strategic center of gravity.

Military history is replete with examples of self-imposed restrictions on the battlespace of an operational commander, usually for political reasons. In the South Pacific Campaign in WWII, Admiral William Halsey was responsible for a specific area of operations. However, the operational center of gravity for Japanese forces in his battlespace was outside of that battlespace, in Rabaul. Admiral Halsey had to request

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[23]Louis C Rotundo, ed. & trans. P.P. Vechnyi, Russian ed. *Battle For Stalingrad, The 1943 Soviet General Staff Study* (Washington, D.C.: Pergamon-Brassey's, 1989), 114, 244, 247. Ananyev, Ivan Matveyevich. *Tank Armies in the Offensive: According to the Experience of the Great Patriotic War.* Trans. by the Joint Publications Research Service (JPRS). (Washington, D.C.: GPO, 22 November 1988), 143. Cajus Bekker, *The Luftwaffe War Diaries* (1964), p. 417. Ray Wagner, ed. Leland Fetzer, trans. *The Soviet Air Force in World War II, The Official History.* Originally published by the Ministry of Defense, USSR. (New York Doubleday & Company 1973), 142.

aid from General MacArthur and his air forces, aid that was fortunately available because both MacArthur and Halsey coordinated their operations.[24]

During the Korean War, the United Nations prohibited combat forces from crossing into China. Clearly, the operational center of gravity of the Chinese forces was their logistics centers and airfields west of the Yalu River. More importantly, the strategic center of gravity of the Chinese-North Korean alliance was not in Pyongyang, but in Peking, an area U.N. forces could not attack because of political restrictions.[25]

In the Vietnamese War, the operational and strategic center of gravity for enemy forces in the south was in North Vietnam. Command and control arrangements restricted General William Westmoreland from attacking this area with his assigned forces. Making matters worse, commanders artificially divided North Vietnam into a "route package" system. This artificial dividing line inside an operational battlespace became an additional divider of space and concentration.[26]

Is the operational center of gravity the same as the strategic center of gravity? It can be, but it depends on two factors: the size of the operational battlespace and the tactical units available. Eventually, there is a final, critical question in center of gravity analysis that an operational commander must ask: if I defeat the operational center of

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[24]Thomas E. Griess, ed. *The Second World War, Asia and the Pacific* (Wayne, N.J.: Avery Publishing Inc., 1984), 122-123 and 139.

[25]William W. Momyer, *Airpower in Three Wars (WWII, Korean, Vietnam)* (Washington, D.C.: Superintendent of Documents, 1978), 5.

[26]U.S.G. Sharp, *Strategy For Defeat* (Novato, Cal.: Presidio Press, 1978), 68 & 78.

gravity, will I also, simultaneously, defeat the enemy and achieve my strategic objectives?[27]

Within a strategic battlespace, there is normally only one operational battlespace. Examples are the Gulf War, Operations Urgent Fury in Grenada, Operation Just Cause in Panama, and the Falklands War. However, there may be more than one battlespace. In WWII, General MacArthur's forces in the Southwest Pacific formed a battlespace that was relatively self-contained and distinct from Admiral Chester Nimitz's battlespace in the Central Pacific.[28]

SUMMARY

This section has posited several characteristics of battlespace commanders can use in the operational art. First, battlespace can be defined. Second, actions by the enemy are part of the closed loop system that describe a battlespace. Third, within each battlespace there are two centers of gravity, one for the enemy as well as one for friendly forces. Fourth, strategists apply all the elements of national power in a strategic battlespace in a synergistic way. Finally, at every level of war, time constrains battlespace. The next section investigates this further.

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[27]In May, 1943, the German forces in North Africa surrendered to the Allies. Since the war did not stop on that date, one must conclude that the German forces in North Africa were not the strategic center of gravity of Germany. Viewed from another perspective, Japanese forces in Malaya and China did not surrender until the Japanese ultimately surrendered in 1945. Therefore, there is a distinction between a center of gravity at the operational level and one viewed from the perspective of a strategic battlespace.

[28]While this was also caused by political decisions made by President Franklin Roosevelt and the Joint Chiefs of Staff, the practical result was that there was so much lateral distance between the two areas as to make them practically independent.

TIME

In the operational art, time is everything. Time determines the commitment of forces at the strategic Level. At the tactical level, time determines the ability to synchronize various weapons systems during a battle. At the operational level, time has a quality that takes on new meaning in operational art, synchronizing individual tactical forces against a single operational objective.

When viewed from the perspective of a closed loop system, battlespace will be self-contained for only a limited time. In other words, battlespace will change with time. Missions will change. Parent units reinforce or resupply subordinate units. Centers of gravity may or may not change. With the beginning of a new engagement, a new battle or a new campaign, everything before becomes irrelevant, and everything to come is self-contained and synergistic for a limited, finite time.

In this regard then, time is the fourth dimension of battlespace. Viewed from one perspective, time is a "correcting mechanism" for the commander. Viewed from another perspective, time can be a constraint. It can define the deadline by which a commander must accomplish his aims.

STRATEGIC LEVEL

At the strategic level of war, time is like a lumbering clock, slowly ticking away during economic and political maneuvering. Strategists normally measure time in months and years.[29] The ability to offset military action with political and economic power will naturally result in a slower operational tempo. During the Gulf War, while waiting for months to see if diplomacy would work, coalition nations started to mass military forces. Thus, diplomatic maneuvering provided the time for the strategic deployment of forces.

At the strategic level, the length of time needed to mobilize a nation has an operational impact. In WWII, it took two years to build the American Army up to an eight million man force. Time available to deploy or mobilize will always limit the ways and means of operational art.[30]

With time, the strategic center of gravity within a strategic battlespace can also change. This is often due to the actions of a third party, such as a country allied with the enemy. China's entrance into the Korean War is an example of this. After her entrance, the strategic center of gravity of the enemy shifted from North Korea to China.

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[29]In spite of many arguments to the contrary, Operations Urgent Fury and Just Cause did last several months. From a strategic level perspective, while military operations only lasted a few days (the tactical level), the pre- and post conflict periods were filled with politico-economic actions of one form or another lasting several months.

[30]Clayton Newell, *Framework of Operational Warfare* (New York: Routledge, Chapman and Hall, Inc., 1991), 53.

TACTICAL LEVEL

Throughout history, the changing quality of time at the tactical level has affected all the services. According to J.F.C. Fuller, "1 hour is not 60 minutes, but what is accomplished in 60 minutes."[31] Today, so much more can be done.

For example, upon sighting the enemy in Lord Horatio Nelson's day, the captain had the crews piped to dinner because the approach to battle could take hours. For Admiral Arleigh Burke at the Battle of Kula Gulf in March 1943, the delay was only 90 seconds from contact until Burke issued the attack order.[32]

Similarly, compare the destruction of Carthage by the Romans in 146 B.C. to that of Tokyo in 1945. In both cases the effect was the same, total destruction of the respective city. The difference is that it took several years for Roman soldiers to destroy Carthage, but it only took a few hours to destroy Tokyo with B-29's. While the effect was the same, the difference in scale is startling.[33]

Today, at the tactical level, commanders measure time in minutes, hours and days. Units become engaged with little thought given to the next battle. There are exceptions, of course. The higher one moves up the Army organization, for example, the more concerned one is with tomorrow's battle. Corps and Army Groups focus on the battle up to four days out.

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[31]Brian Holden Reid, "J.F.C. Fuller and B.H. Liddell Hart," *Military Review* (May 1990): 70.

[32]Michael A. Palmer, "Burke and Nelson: Decentralized Style of Command," *Naval Institute Proceedings* (July 1991): 58-59.

[33]Phillip S. Meilinger, "Global Air Power and Power Projection," *RUSI and Brassey's Defence Yearbook 1992* (London: Brassey's Publishers, 1992), 199.

As mentioned before, no battlespace at the tactical level will remain self-contained for very long. As a tactical unit reaches its culminating point, its need for resupply and new missions increases proportionally. In doing so, its battlespace will essentially shrink. This continuous cycle of mission-resupply-mission show that the tactical units are part of a bigger operational battlespace. This battlespace is also constrained by time.

OPERATIONAL LEVEL

Commander's measure time at the operational level in days, weeks and months. Here, the issue of time becomes one of coordination and interaction of the various tactical units. However, the various component commanders plan and fight on different scales, even at this level. A ground commander tends to focus on narrow space and wide time lines (24-96 hours). A naval commander focuses on wide space, as much as the air commander, and with varying timelines.

Air commanders focus on wide space and very wide timelines. For land operations planned to last a short time, the air commander must think in terms of air operations conducted over days, weeks, or months.[34] Aerial preparation for the Normandy invasion lasted months, as did the preparation for the invasions of Sicily and Italy. General Chuck Horner's plan in the Gulf War contemplated a strategic air campaign and supporting operations that would last around 10 days. It ultimately lasted 38 days before ground operations started.[35]

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[34]Edward L. Warner, III and Glenn A. Kent. "A Framework For Planning the Employment of Air Power in Theater War." A Rand Note (Santa Monica, Ca, Jan. 1984), 18.

[35]*Conduct of the Persian Gulf Conflict, An Interim Report To Congress* (July 1991), 4-2, 4-7.

The operational commander's awareness of time can also have an impact on when tactical forces should attack. Admiral Raymond A. Spruance pressed the attack at the Battle of Midway, winning a stunning victory. More important, however, was his operational decision to withdraw, thus preserving his force to fight another battle.[36]

Speed as a quotient of time has a unique quality at the operational level. During WWI, the train offered the Germans a technological solution to the operational massing of forces along the front. However, for all the operational speed and compression of distance the train offered, it was not enough. When the soldier detrained, his mobility was no better than if he had walked from Berlin. The train was operationally and strategically significant, but ultimately, the soldier moved at tactical speeds.[37] The same situation exists today with airborne and marine forces. In the final analysis, operational speed does not necessarily translate into tactical speed, particularly for ground forces.[38]

The most important aspect of time in the operational art is the idea that the center of gravity in an operational battlespace can also change. In most cases that this is true, either one, or both, of the adversaries changed their operational or strategic objectives, thus changing their requirement for freedom of action to accomplish those objectives. For example, in the defense, the seaport at Pusan in the Korean War was a friendly

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[36]S.E. Smith, ed., *The United States Navy in World War II* (New York: Ballantine Books, 1967), 325.

[37]Simpkin, p. 102.

[38]Airborne enthusiasts argue that this disadvantage is not a factor when airborne forces are dropped immediately on the objective. Disregarding the reason that one would not want to jump on the ultimate objective, i.e, the threat, the same conclusion must be made when those same forces move on foot to a subsequent objective. Another parallel must certainly be the British operation in the Falklands. After moving the length of the Atlantic in less than 40 days, British Marines walked the width of East Falkland Island in 16 days because most of their helicopters were out of action.

center of gravity for friendly ground forces in the encirclement. However, the friendly center of gravity changed very rapidly with the amphibious landings at Inchon, an offensive operational maneuver. The friendly center of gravity became the sea line of communication (SLOC) and the port that supplied those forces at Inchon.

SUMMARY

When the campaign planner conceives the battlespace in which he must fight, he cannot ignore the fourth dimension, time. Strategists measure time in months and years. Commander's measure time at the tactical level in minutes, hours and days. Tactical commanders synchronize their weapons in time to maximize combat power. At the operational level, commander's measure time in days and months. Commander's synchronize the capabilities of all the tactical forces inside an operational battlespace in a fluid campaign to achieve strategic objectives. At each level of war, time accentuates service capabilities fundamentally different from those found in any other.

OPERATIONAL ART

The military classicist Ardent du Picq showed that, no matter the size or composition, geography and time factors constrain opposing forces. Commander's can only engage a portion of their forces at a particular moment.[39] In spite of the tremendous flexibility of air and naval forces, that maxim still holds today. Ultimately, the com-

[39]Leonhard, p. 45.

mander and planner will have to use his ability to trade space for time, or vice versa, in order to take advantage of an opening.

The exchange of space for time is a term normally reserved for the operational defensive, usually because there is no other choice.[40] In the Korean War, U.N. forces conducted the first and second allied withdrawals to preserve allied ground forces as they overextend the lines of the North Koreans. Their loss of battlespace gained the allied time to rebuild forces and counterattack.

Field Marshall Von Manstein's brilliant counterstroke in the Spring of 1942 is another excellent example of trading space for time. As the Soviet Army's Popov Group broke out from Stalingrad, it gradually left its air force behind. In their eagerness to defeat a retreating German ground force, the Popov Group drove so far ahead of its air force that Manstein turned the full fury of his army and tactical air force against them. Thus, within his battlespace, Manstein brilliantly used the concepts of space and time to create the operational conditions for a tactical victory.

The reverse of "space for time" is "time for space." In the first, the commander freely gives up his battlespace to close on his lines of operation. He thus improves his ability to reconstitute an effective fighting force on terrain favorable for the defense. In the second, the commander uses time without a corresponding change in battlespace. If used incorrectly, it can have a negative impact on the ability of a force to achieve its objectives. During the Anzio operation in WWII, MG John P. Lucas, the commander of

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[40]This statement is obviously separate from a related question that is usually relegated to the strategic level: "Whose space are you trading?" For example, the political restraint of not giving up German territory during the Cold War drove NATO strategy to one of Forward Defense and a tight linkage to nuclear weapons.

VI Corps, did not seize the key terrain to his front, thus missing an opportunity to proceed to Rome. He chose, instead, to trade time for available battlespace in order to build up his forces. In doing so, General Lucas sacrificed the operational and strategic initiative and clearly demonstrated an attrition style of warfare.[41]

A more positive example of trading time for space might be General George Patton's attack into the Ardennes in December, 1944. Responding to a *Wehrmacht* attack into the "Bulge," Patton's Third Army turned from an eastward orientation ninety degrees to the north. Patton moved three divisions 100 miles in three days to counterattack against the "Bulge."

Sometimes, a victory in one tactical battlespace gives the commander of another battlespace the time to maneuver successfully. In the Battle of Bismarck Sea, General George Kenny's Fifth AF effectively destroyed a Japanese convoy one hundred miles from the ground battles in New Guinea. In doing so, Kenny effectively destroyed Japanese SLOCs to New Guinea and set the conditions for follow-on operations in the Southwest Pacific area.[42]

CONCLUSION

This paper has described two concepts strategists, operational commanders, and planners can use to promote a better understanding of operational art and campaign

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[41]Richard C. Halbleib, "No Guts, No Glory—Operational Risk Taking: Gaining and Maintaining the Tempo." SAMS Monograph, USACGSC, Ft. Leavenworth, Ks., 1990, p. 20.

[42]George C. Kenney, *General Kenney Reports* (Washington, D.C., 1987), 205 and 218.

design. Battlespace is a self-contained, synergistic, closed-loop system constrained by the fourth dimension, time.

At the strategic level, strategic goals shape the battlespace. The elements of national power are part of the strategic battlespace. As time passes, the ebb and flow of war will change the character of the strategic battlespace, particularly as the opponents change their strategic objectives or allies join them. Within the strategic battlespace, there is normally one operational battlespace. However, there may be more.

Many different tactical units, each with its own battlespace, inhabit the operational battlespace. Operational centers of gravity can change as enemy and friendly objectives change. Within a battlespace, practitioners of the operational art must synchronize various tactical units in time to achieve a single operational aim.

Robert E. Lee once said, "I think and work with all my powers to bring my troops to the right place at the right time."[43] That dictum should still apply today, especially for the commander of tactical forces as wide and varied in capabilities as those of a modern army, navy and air force. The concepts of battlespace and time can help the joint planner formulate a campaign plan. The utility of these concepts, however, is best seen in the training and education of future operational commanders. For ultimately, it is the operational commander who must have the vision to see the strategic and operational battlespace, understand the changes that are occurring within both, and make adjustments to achieve the desired strategic end state.

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[43]Jay Luvaas, "Lee and the Operational Art: The Right Place, The Right Time," *Parameters* (Autumn, 1992): 2.

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